SERRATIA PLYMUTHICA DAIRY INDUSTRY ISOLATES AND THEIR ANTIMICROBIAL METABOLITES IMPACT ON PATHOGENS

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Background and aims: Phenotypical differences from interstrain variability is a known phenomenon, assessed in this study for V4 and Y *S. plymuthica* isolates, particularly at antimicrobial metabolites production and effect on pathogens biofilms.
Methods: Isolates were biochemically characterized, specific growth rates in Tryptic Soy/Skim Milk Broth determined, and the antimicrobial activity of cell-free spent media tested on *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Pseudomonas aeruginosa*, *Bacillus cereus* and *Escherichia coli* lawns. Their biofilm removal capacity was assessed on 24h pathogens biofilms, through 30min treatments, and biofilm formation impairment ability by 10min substratum pre-conditioning.
Results: These siderophores and quorum-sensing inhibitors releasers isolates showed different protease expression and growth rates in both media. Droplets of isolates cell-free spent TSB presented positive inhibitory capacity. V4-SMB biofilms had equal mass and specific respiratory activity values, while low mass Y biofilms were extremely active. Its biofilms in TSB showed the opposite, being V4 biofilms particularly metabolically active and thicker.
All cell-free SMB/TSB supernatants pre-conditioning led to a steep reduction of the respiratory activity of *S. aureus*, *E. coli* and *S. epidermidis* biofilms later formed, though increasing their mass. Biofilms treatment with any supernatant similarly decreased their mass. *L. monocytogenes*, was particularly affect by all, *S.aureus* by TSB/SMB V4-spent, and *S. epidermidis* by SMB V4-spent.
Conclusions: *S. plymuthica* isolates registered different biofilm formation ability and cell-free spent TSB/SMB antimicrobial activity. An understanding of mechanisms underlying antimicrobials action-mode in single/mixed Gram positive/negative species biofilms is sought.